

FORM PTO-1390 (Modified)
(REV 11-98)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

293.000193

TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

unknown 09/601130

INTERNATIONAL APPLICATION NO.
PCT/DE99/00211INTERNATIONAL FILING DATE
28/01/1999PRIORITY DATE CLAIMED
29/01/1998

TITLE OF INVENTION

OPTICAL ARRANGEMENT FOR THE SPECTRAL FANNING OUT OF A LIGHT BEAM

APPLICANT(S) FOR DO/EO/US

Johann ENGELHARDT, Heinrich ULRICH and Hilmar GUGEL

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
 - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☒ has been transmitted by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☒ A copy of the International Search Report (PCT/ISA/210).
8. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☒ have not been made and will not be made.
9. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
10. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).

Items 13 to 20 below concern document(s) or information included:

13. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☒ Certificate of Mailing by Express Mail
20. ☒ Other items or information:

- 1) Acknowledgement postcard
- 2) Express Mail Label No. EL628755921 US

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 1.51) 09/601130	INTERNATIONAL APPLICATION NO. PCT/DE99/00211	ATTORNEY'S DOCKET NUMBER 293.000193
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21. The following fees are submitted:

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :

- ☐ Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO **\$970.00**
- ☒ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO **\$840.00**
- ☐ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO **\$690.00**
- ☐ International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) **\$670.00**
- ☐ International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) **\$96.00**

ENTER APPROPRIATE BASIC FEE AMOUNT =**CALCULATIONS PTO USE ONLY****\$840.00**

Surcharge of **\$130.00** for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).

\$0.00

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE
Total claims	18 - 20 =	0	x \$18.00
Independent claims	1 - 3 =	0	x \$78.00
Multiple Dependent Claims (check if applicable). <input type="checkbox"/>			\$0.00

\$0.00**\$0.00****\$0.00****TOTAL OF ABOVE CALCULATIONS =****\$840.00**

Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28) (check if applicable). ☐

\$0.00**SUBTOTAL =****\$840.00**

Processing fee of **\$130.00** for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (f)).

\$0.00**TOTAL NATIONAL FEE =****\$840.00**

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). ☒

\$40.00**TOTAL FEES ENCLOSED =****\$880.00****Amount to be:****refunded****\$****charged****\$**

☒ A check in the amount of **\$880.00** to cover the above fees is enclosed.

☐ Please charge my Deposit Account No. _____ in the amount of _____ to cover the above fees.
A duplicate copy of this sheet is enclosed.

☒ The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. **50-0822** A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

George L. Snyder, Jr.
Simpson, Simpson & Snyder, L.L.P.
5555 Main Street
Williamsville, New York 14221
Telephone No. 716-626-1564

SIGNATURE

George L. Snyder, Jr.

NAME

37,729

REGISTRATION NUMBER

July 27, 2000

DATE

09/601130

CERTIFICATE OF MAILING BY "EXPRESS MAIL" (37 CFR 1.10)

Applicant(s): Johann ENGELHARDT et al.

Docket No.

293.000193

Serial No.

N/A

Filing Date

N/A

Examiner

N/A

Group Art Unit

N/A

534 Rec'd PCT/PTC 27 JUL 2000

Invention: **OPTICAL ARRANGEMENT FOR THE SPECTRAL FANNING OUT OF A LIGHT BEAM**

I hereby certify that the following correspondence:

National Stage patent application and related documents

(Identify type of correspondence)

is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 in an envelope addressed to: The Assistant Commissioner for Patents, Washington, D.C. 20231 on

July 27, 2000

(Date)

Karen R. Bruno

(Typed or Printed Name of Person Mailing Correspondence)

(Signature of Person Mailing Correspondence)

EL628755921US

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09/601130

Express Mail Label No. EL628755921US

534 Rec'd PCT/PTC 27 JUL 2000

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
PATENT COOPERATION TREATY

Applicant:	Johann ENGELHARDT et al.	Group Art Unit:	unknown
Serial No.:	unknown	Examiner:	unknown
I.A. Filed:	28-January-1999	Attorney Ref.:	293.000193
I.A. No.:	PCT/DE99/00211		
Title:	OPTICAL ARRANGMENT PROVIDED FOR A SPECTRAL FANNING OUT OF A LIGHT BEAM		

PRELIMINARY AMENDMENT

Box PCT
Commissioner for Patents
Washington, D.C. 20231

Sir:

Please preliminarily amend the above-identified application, filed concurrently herewith under 35 U.S.C. § 371, as follows:

IN THE SPECIFICATION:

At page 1, line 5 (blank line), please insert:

--CROSS-REFERENCES TO RELATED APPLICATIONS

The present application is the U.S. national phase under 35 U.S.C. 371 of International Application No. PCT/DE99/00211 filed January 28, 1999 claiming priority of German Patent Application No. 198 03 442.3 filed January 29, 1998.

FIELD OF THE INVENTION--;

At page 1, line 10 (blank line), please insert the centered heading --BACKGROUND OF THE INVENTION--;

At page 1, line 23 (blank line), please insert the centered heading --SUMMARY OF THE INVENTION--;

At page 1, line 29 - page 2, line 1, please delete “the features of Claim 1. According to the claim, such an arrangement is characterized in that the pinhole has” and insert --a pinhole having--;

At page 4, before line 1, please insert the centered heading --BRIEF DESCRIPTION OF THE DRAWINGS--;

At page 4, lines 2-3, please delete “based on patent claim 1”;

At page 4, line 18 (blank line), please insert the centered heading --DETAILED DESCRIPTION OF THE INVENTION--; and

At page 7, line 1, please delete “Patent claims” and insert --What is claimed is:--.

IN THE CLAIMS:

Please cancel claim 1-12 and add the following new claims 13-30:

- 13. In an optical arrangement for the spectral fanning out of an incoming light beam in the detection beam path of a confocal microscope for the subsequent splitting of the spectrally fanned out beam out of its dispersion plane and for the detection of the split spectral range, wherein said incoming light beam is focused on a pinhole occluder having a passageway, the improvement comprising: said passageway being polygonal in configuration.
14. The improvement according to claim 13, wherein said passageway is symmetrically configured.
15. The improvement according to claim 13, wherein said passageway is triangular in configuration.

16. The improvement according to claim 14, wherein said passageway is triangular in configuration.
17. The improvement according to claim 13, wherein said passageway is configured with four corners.
18. The improvement according to claim 14, wherein said passageway is configured with four corners.
19. The improvement according to claim 17, wherein said passageway is rectangular in configuration.
20. The improvement according to claim 18, wherein said passageway is rectangular in configuration.
21. The improvement according to claim 13, further comprising a screen in said detection beam path for suppressing diffraction phenomena.
22. The improvement according to claim 21, wherein said screen is a variable screen.
23. The improvement according to claim 21, wherein said screen is located after said pinhole occluder in said detection beam path.
24. The improvement according to claim 21, wherein said screen is located before said pinhole occluder in said detection beam path.

25. The improvement according to claim 13, wherein focusing optics and dispersion means for spectrally fanning out said light beam are located after said pinhole occluder.
26. The improvement according to claim 25, wherein said dispersion means is a prism.
27. The improvement according to claim 25, wherein said focusing optics are located in front of and behind said dispersion means.
28. The improvement according to claim 27, wherein said focusing optics comprise lens arrangements.
29. The improvement according to claim 28, wherein said light beam is focused into a gap/detector arrangement by said focusing optics.
30. The improvement according to claim 29, wherein said gap/detector arrangement comprises color detection gaps arranged and aligned such that diffraction phenomena can be screened out at said detection gap.--

Dated: July 27, 2000

3/PRTS

09/601130

534 Rec'd PCT/PTC 27 JUL 2000

Express Mail Label No. EL628755921 US

293.000193

English Translation of International Application PCT/DE99/00211

Optical Arrangement for the Spectral Fanning Out of a Light Beam

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The invention concerns an optical arrangement for the spectral fanning out of a light beam, preferably in the detection beam path of a confocal microscope, especially for the subsequent splitting of the fanned out beam out of its dispersion plane and for the detection of the split up spectral ranges, whereby the incoming light beam is focused on a pinhole.

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Optical arrangements of the type in question here have been known from practice for a fairly long time, and specifically in connection with the simultaneous detection of several spectral ranges of a light beam, which is done with a so-called multi-band detector. A multi-band detector of this type makes for a complex optical arrangement that prior to this, with additional optics, has enabled multiple focusing.

If in the detection beam path of a confocal microscope one wants first to fan out the beam spectrally and then split it up out of its dispersion plane into individual spectral ranges, a high dynamic response for the separation of the excitation light is desired. However, diffractions that stem from the shape of the detection pinhole stand fundamentally in opposition to such a high dynamic, whereby in particular secondary maxima of the diffraction function in the spectrally separated detection range cause problems.

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The object of the invention is therefore to configure and further develop an optical arrangement of the type in question such that a splitting of the fanned out beam with a suppression of interfering diffraction portions in the spectral range is possible.

The optical arrangement of the type in question according to the invention fulfills the aforementioned purpose by means of the features of patent claim 1. According to the claim,

such an arrangement is characterized in that the pinhole has a polygonal passageway for the light beam.

According to the invention, first of all it has been recognized that the form of the pinhole is responsible for the diffraction pattern that occurs for the various colors in the focus plane, or in the dispersion plane. While specifically a pinhole with a round passageway has annular secondary maximum diffraction values with limited dynamic response because of the diffraction effect occurring here, by using a pinhole with a polygonal passageway a completely different diffraction pattern results, namely a diffraction pattern whose secondary maximum diffraction values are arranged in lines that cross each other. In any case it is possible, in light of such an arrangement, to detect the primary diffraction maxima and to suppress the problematic secondary diffraction phenomena.

With regard to a concrete configuration of the pinhole or of the passageway formed there, it is of further benefit if this – polygonal – passageway is configured symmetrically. In this case the passageway could be of triangular or four-cornered configuration, whereby in the context of a four-cornered configuration the symmetrical – and therefore rectangular – form is especially advantageous. From this there results specifically a completely specialized diffraction pattern of the pinhole for various spectral ranges or colors, namely a spectral cross, whereby the axes of the cross meet in the secondary diffraction maxima. Secondary diffraction maxima lying in between are less problematic in the detection or splitting.

Screens that are preferably variable could also be arranged in the beam path in front of or behind the pinhole. These screens are used to suppress diffraction maxima or diffraction phenomena of a higher order.

In principle simultaneous detection of several spectral ranges of a light beam is possible without additional measures if the light beam is first spectrally fanned out and then a splitting of the fanned out beam out of the dispersion plane is performed. The splitting of the fanned out beam out of the dispersion plane is accomplished by means of a special optical

arrangement, whereby the partial beams split up into spectral ranges or the spectral ranges themselves are detected, and indeed are detected simultaneously. The important thing here is that a fanning out of the light beam precedes the actual splitting into spectral ranges so that the splitting out of the dispersion plane can occur on the fanned out beam. In any case a multiple focusing with additional optics is not necessary here.

In principle two optically arrangements are provided here, namely once for the spectral fanning out of the light beam and another time for splitting and subsequent detection. The pinhole on which the incoming lightbeam is focused is situated upstream of the arrangement for spectral fanning out of the light beam, whereby the pinhole can be situated directly downstream of a laser scanner. What is important here, in any case, is the recognition that the form of the passageway in the pinhole creates a specific diffraction pattern of the fanned out light beam in the dispersion plane.

From the pinhole, the beam in some cases runs through the previously mentioned variable screen to focusing optics and dispersion means. The dispersion means can be designed as a prism for an especially simple construction. Focusing optics, which can in turn comprise a lens arrangement, are arranged both in front of and behind the dispersion means or prism.

The beam running divergent from the path from the pinhole to the prism is focused through the focusing optics into the gap/detector arrangement situated downstream at which point the splitting into spectral ranges occurs.

Regarding the gap/detector arrangement, it is advantageous if special color selection gaps are provided there in the focusing plane or dispersion plane of the fanned out beam, said color selection gaps being in turn arranged and aligned such that diffraction can be screened out at the detection gap.

There are then various possibilities for configuring and developing further the present invention in an advantageous way. On the one hand one can refer to the claims based on patent claim 1; on the other hand, one can refer to the following explanation of an embodiment of the invention with reference to the drawings. Generally preferred configurations and further developments of the concept are explained in connection with the explanation of the preferred embodiment of the invention. The drawings show:

Fig. 1 in a schematic representation, a traditional optical arrangement with a pinhole having a round passageway,

Fig. 2 in a schematic representation, an embodiment of an optical arrangement according to the invention, whereby the pinhole has a square passageway and

Fig. 3 in a schematic representation, the entire optical arrangement comprising the fanning out of the light beam, the splitting of the fanned out beam and the detection.

Figures 1 through 3 show an optical arrangement for the spectral fanning out of a light beam 1, the light beam 1 here being in the detection beam path of a confocal microscope (not shown). After the spectral fanning out of the light beam 1, there is a splitting of the fanned out beam 2 from out of its dispersion plane 3. A detection of the split spectral ranges 4 is accomplished by means of suitable detectors 5. The overall connection can be inferred from Fig. 3, whereby detection gaps 6 are provided there for selection of the spectral ranges 4. The simple representation used here serves to clarify the operation. Additional details are left out in order to give an overview.

The optical arrangement shown in Fig. 1 is an arrangement of the conventional type, i.e. an arrangement known in the art, in which the incoming light beam 1 is focused on a pinhole 7 with a round passageway 8. From there out the beam runs through focusing optics

9 and a dispersion means configured as a prism 10 and through additional focusing optics 11 into a gap/detector arrangement 12 indicated only in Fig. 3, whereby due to a pinhole 7 with a round passageway 8 in the dispersion plane 3 a completely specialized diffraction pattern 13 for different colors is produced. Annularly depicted secondary diffraction maxima limit the dynamic response of the known system.

Fig. 2 shows an optical arrangement according to the invention in which the pinhole 7 has a polygonal passageway 8, specifically a four-cornered or rectangular passageway. This pinhole 7 or the passageway 8 realized there, in contrast to the traditional optical arrangement, creates a completely different diffraction pattern 13 in the dispersion plane 3, specifically because of the diffraction maxima 16 arranged in two lines 14 and 15.

Fig. 2 shows in merely symbolic fashion that the detection gaps 6 are arranged and aligned such that the diffraction phenomena at the detection gap 6 can be screened, since at most negligible secondary maximum diffraction values lie along the detection line 17.

However, what is important is that the configuration of the pinhole, or its passageway 8, is responsible for the diffraction pattern 13, whereby with a polygonal passageway 8, the pinhole 7 yields a diffraction pattern 13 that enables a screening of the secondary maxima of the diffraction phenomena by means of suitable detection gaps 6, thus specifically with the use of a rectangular opening 8 of the pinhole 7 by means of spectral splitting diagonal to the diffraction cross.

Reference number list

- 1 light beam
- 2 fanned out beam
- 3 dispersion plane
- 4 spectral range
- 5 detector
- 6 detection gap
- 7 pinhole
- 8 passageway
- 9 focusing optics
- 10 prism
- 11 focusing optics
- 12 gap/detector arrangement
- 13 diffraction pattern
- 14 line
- 15 line
- 16 diffraction maxima
- 17 detection line

Patent claims

1. Optical arrangement for the spectral fanning out of a light beam (1), preferably in the detection beam path of a confocal microscope, in particular for the subsequent splitting of the fanned out beam (2) out of its dispersion plane (3) and for the detection of the split spectral range (4), whereby the incoming light beam (1) is focused on a pinhole (7),

wherein the pinhole (7) has a polygonal passageway (8).

2. Arrangement according to claim 1, **wherein** the polygonal passageway (8) is symmetrically configured.
3. Arrangement according to claim 1 or 2, **wherein** the passageway (8) is configured as triangular.
4. Arrangement according to claim 1 or 2, **wherein** the passageway (8) is configured with four corners.
5. Arrangement according to claim 4, **wherein** the passageway (8) is configured as rectangular.
6. Arrangement according to one of the claims 1 through 5, **wherein** a preferably variable screen is arranged in front of and/or behind the pinhole (7).
7. Arrangement according to one of the claims 1 through 6, **wherein** focusing optics (9 and 11) and dispersion means are situated downstream from the pinhole (7).
8. Arrangement according to claim 7, **wherein** the dispersion means comprise a prism (10).

9. Arrangement according to one of the claims 1 through 8, **wherein** focusing optics (9 and 11) are arranged in front of and/or behind the dispersion means.

10. Arrangement according to one of the claim 9, **wherein** the focusing optics (9 and 11) comprise lens arrangements.

11. Arrangement according to one of the claim 10, **wherein** the light beam (1) can be focused into a gap/detector arrangement (12) by means of the focusing optics (9 and 11).

12. Arrangement according to one of the claim 11, **wherein** the gap/detector arrangement (12) in the focusing plane or dispersion plane (3) of the fanned out beam (2) comprises color selection gaps or detection gaps (6) that are arranged and aligned such that diffraction phenomena can be screened out at the detection gap (6).

Abstract

The invention relates to an optical arrangement provided for a spectral fanning out of a light beam (1), preferably in the detection beam path of a confocal microscope, especially for the subsequent splitting of the fanned out beam (2) out of the dispersion plane thereof. The optical arrangement is also provided for detecting the fanned out spectral regions (4), whereby the incoming light beam (1) is focused on a pinhole (7). The invention is characterized in that the pinhole (7) has a polygonal passageway (8) in order to realize a high dynamic response when the light beam is split into spectral regions (4) or into spectral colors.

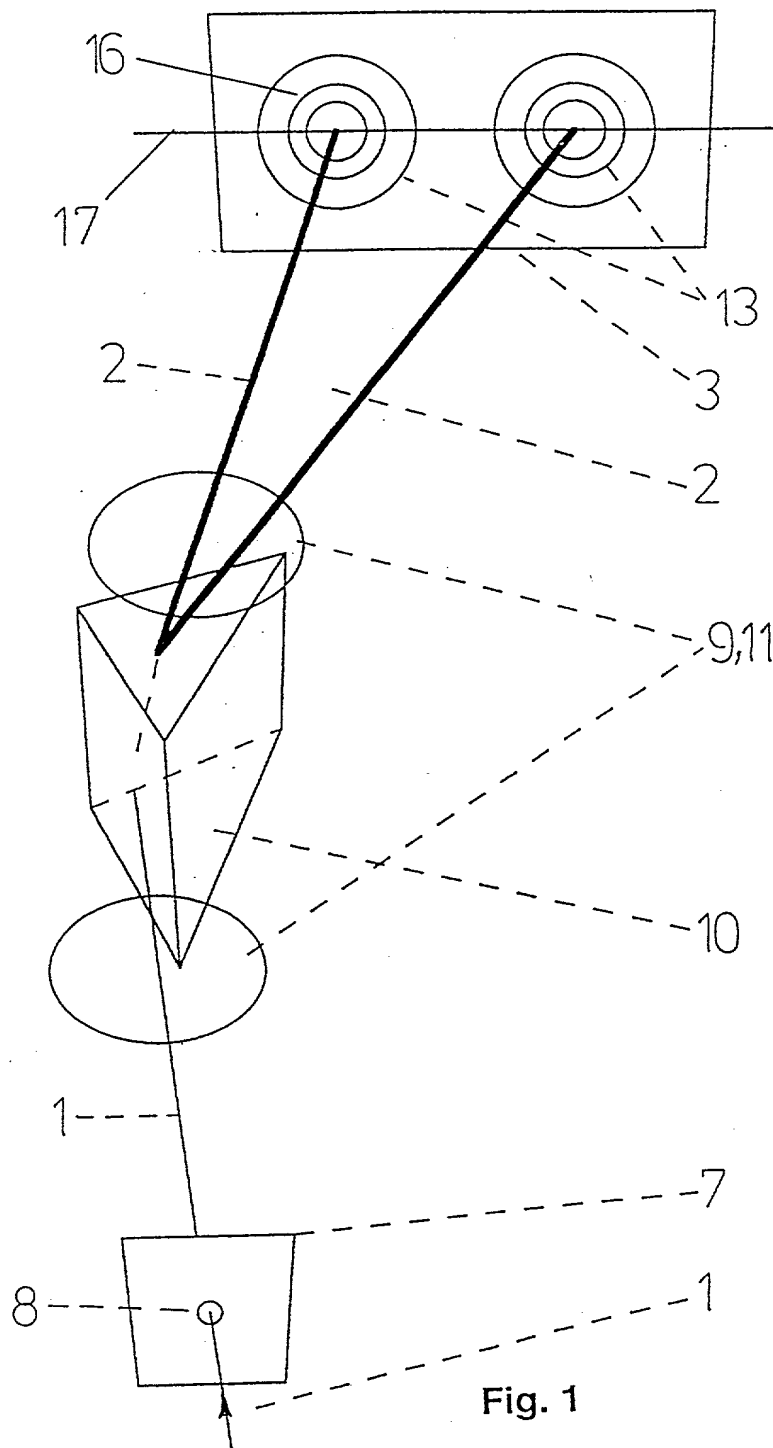
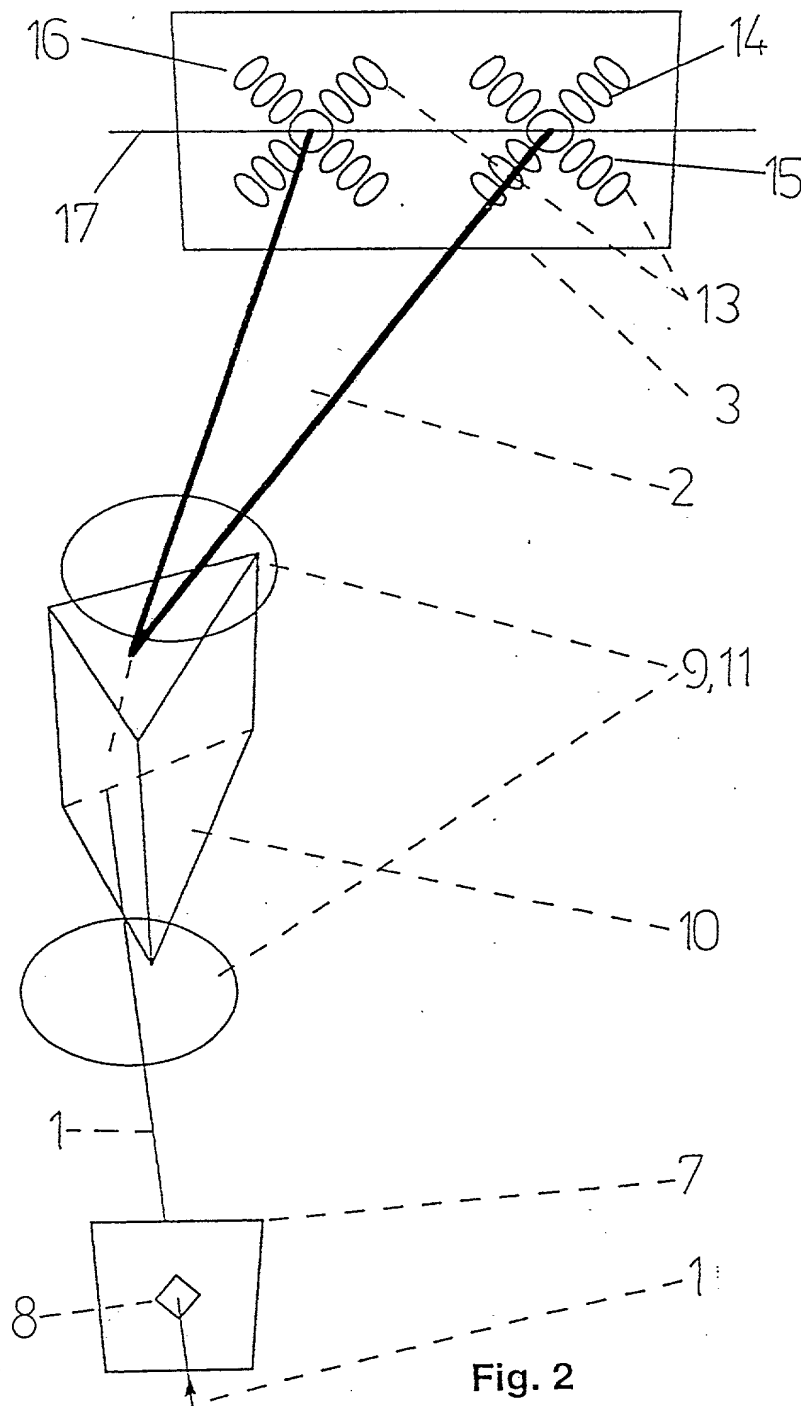


Fig. 1



3/3

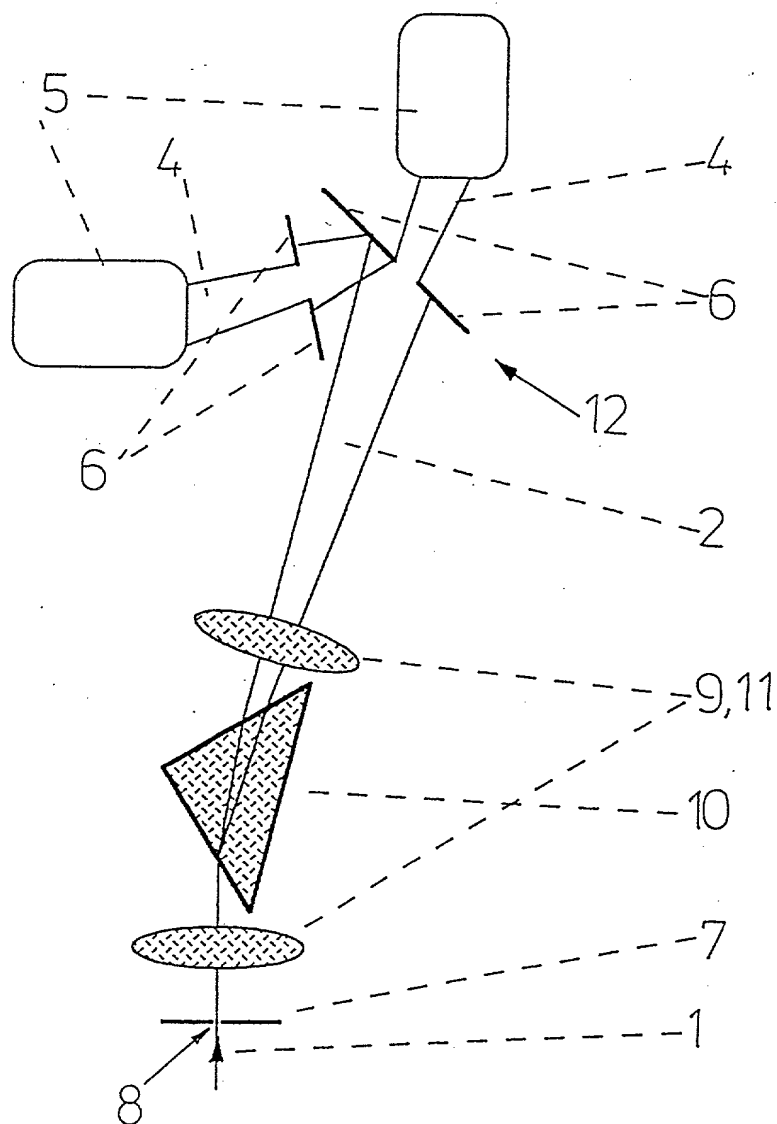


Fig. 3

Express Mail Label No. EL628755921 USRef. No. 293.000193
(E 0357 US)

Declaration and Power of Attorney for Patent Application

Erklärung für Patentanmeldungen mit Vollmacht

German Language Declaration

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

daß mein Wohnsitz meine Postanschrift und meine Staatsangehörigkeit den im nachstehenden nach meinem Namen aufgeführten Angaben entsprechen, daß ich nach bestem Wissen der ursprüngliche, erste und alleinige Erfinder (falls nachstehend nur ein Name angegeben ist) oder ein ursprünglicher, erster und Mitfinder (falls nachstehend mehrere Namen aufgeführt sind) des Gegenstandes bin, für den dieser Antrag gestellt wird und für den ein Patent für die Erfindung mit folgendem Titel beantragt wird:

OPTISCHE ANORDNUNG ZUM SPEKTRALEN AUFFÄCHERN EINES LICHTSTRAHLS

deren Beschreibung hier beigefügt ist, es sei denn (in diesem Falle Zutreffendes bitte ankreuzen), diese Erfindung

- ☒ wurde angemeldet am 28-Januar-1999 unter der US-Anmeldenummer oder unter der Internationalen Anmeldenummer im Rahmen des Vertrags über die Zusammenarbeit auf dem Gebiet des Patentwesens (PCT) PCT/DE99/00211 und am _____ abgeändert (falls zutreffend).

Ich bestätige hiermit, daß ich den Inhalt der oben angegebenen Patentanmeldung, einschließlich der Ansprüche, die eventuell durch einen oben erwähnten Zusatzantrag abgeändert wurde, durchgesehen und verstanden habe.

Ich erkenne meine Pflicht zur Offenbarung jeglicher Informationen an, die zur Prüfung der Patentfähigkeit in Einklang mit Titel 37, Code of Federal Regulations, § 1.56 von Belang sind.

Ich beanspruche hiermit ausländische Prioritätsvorteile gemäß Title 35, US Code, § 119(a)-(d), bzw. § 365(b) aller unten aufgeführten Auslandsanmeldungen für Patente oder Erfinderurkunden, oder § 365(a) aller PCT internationalen Anmeldungen, welche wenigstens ein Land ausser den Vereinigten Staaten von Amerika benennen, und habe nachstehend durch ankreuzen sämtliche Auslandsanmeldungen für Patente bzw. Erfinderurkunden oder PCT internationalen Anmeldungen angegeben, deren Anmeldetag dem der Anmeldung, für welche Priorität beansprucht wird, vorangeht.

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated next to my name. I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

OPTICAL ARRANGMENT PROVIDED FOR A SPECTRAL FANNING OUT OF A LIGHT BEAM

the specification of which is attached hereto unless the following box is checked:

- ☒ was filed on 28-January-1999 as United States Application Number or PCT International Application Number PCT/DE99/00211 and was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

I hereby claim foreign priority under Title 35, United States Code, § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Applications
(Frühere ausländische Anmeldungen)

198 03 442.3 Germany 29/January/1998

App. No. Country Day/Month/Year

App. No. Country Day/Month/Year

Ich beanspruche hiermit Prioritätsvorteile unter Title 35, US Code, § 119(e) aller US-Hilfsanmeldungen wie unten aufgeführt.

App. No. Filed:

App. No. Filed:

Ich beanspruche hiermit die mir unter Title 35, US Code, § 120 zustehenden Vorteile aller unten aufgeführten US-Patentanmeldungen bzw. § 365(c) aller PCT internationalen Anmeldungen, welche die Vereinigten Staaten von Amerika benennen und erkenne, insofern der Gegenstand eines jeden früheren Anspruchs dieser Patentanmeldung nicht in einer US-Patentanmeldung, bzw. PCT internationalen Anmeldung in in einer gemäß dem ersten Absatz von Title 35, US-Code, § 112 vorgeschriebenen Art und Weise offenbart wurde, meine Pflicht zur Offenbarung jeglicher Informationen an, die zur Prüfung der Patentfähigkeit in Einklang mit Title 37, Code of Federal Regulations, § 1.56 von Belang sind und die im Zeitraum zwischen dem Anmeldetag der früheren Patentanmeldung und dem nationalen oder im Rahmen des Vertrags über die Zusammenarbeit auf dem Gebiet des Patentwesens (PCT) gültigen internationalen Anmeldetags bekannt geworden sind.

App. No. Filed:

App. No. Filed:

Ich erkläre hiermit, daß alle in der vorliegenden Erklärung von mir gemachten Angaben nach bestem Wissen und Gewissen der Wahrheit entsprechen, und ferner daß ich diese eidesstattliche Erklärung in Kenntnis dessen ablege, daß wissentlich und vorsätzlich falsche Angaben oder dergleichen gemäß § 1001, Title 18 des US-Code strafbar sind und mit Geldstrafe und/oder Gefängnis bestraft werden können und daß derartige wissentlich und vorsätzlich falsche Angaben die Rechtswirksamkeit der vorliegenden Patentanmeldung oder eines aufgrund deren erteilten Patentes gefährden können.

VERTRETUNGSVOLMACHT: Als benannter Erfinder beauftrage ich hiermit den (die) nachstehend aufgeführten Patentanwalt (Patentanwälte) und/oder Vertreter mit der Verfolgung der vorliegenden Patentanmeldung sowie mit der Abwicklung aller damit verbundenen Angelegenheiten vor dem US-Patent- und Markenamt: (Name(n) und Registrationsnummer(n) auflisten)

Priority Not Claimed
(Priorität nicht beansprucht)

☐

☐

☐

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below.

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s), or § 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

Status: Patented/Pending/Abandoned

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: (list name and registration number)

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